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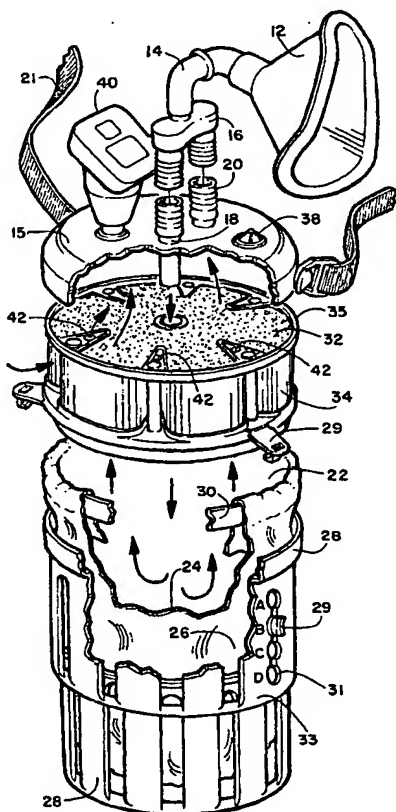
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Published:

- with international search report
- before the expiration of the time limit for amending the  
claims and to be republished in the event of receipt of  
amendments

[Continued on next page]

(54) Title: BREATHING APPARATUS FOR HYPOXIC PRE-ACCLIMATIZATION AND TRAINING



(57) Abstract: A hand-held rebreather/breathing apparatus for high altitude pre-acclimatization and training. Air exhaled by a user is directed to a reservoir bag for cooling and condensate collection. At inhalation negative pressure created a mixing chamber forces the air stored in the reservoir bag to pass via CO<sub>2</sub> absorption chamber where it may be mixed with a fresh portion of the ambient air that influxes via orifice(s) communicating with this chamber. Baseline of the minimum oxygen concentration in inspired air can be pre-set by means of adjustment of the maximum volume of the reservoir bag and/or by means of altering of the number or diameter of one or a plurality of orifices for commination of the ambient air. Biofeedback may be provided by an oxygen monitor.

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*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

# INTERNATIONAL SEARCH REPORT

International application No.  
**PCT/IB2003/005838**

| <b>A. CLASSIFICATION OF SUBJECT MATTER</b>   |   |   |   |   |
|--|---|---|---|---|
| Int. Cl. <sup>7</sup> : A62B 7/14, 9/00, 11/00   |   |   |   |   |
| According to International Patent Classification (IPC) or to both national classification and IPC  |   |   |   |   |
| <b>B. FIELDS SEARCHED</b>  |   |   |   |   |
| Minimum documentation searched (classification system followed by classification symbols)  |   |   |   |   |
| Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched  |   |   |   |   |
| Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)<br>DWPI IPC A62B 7/14, 9/00, 11/00 and Keywords (Oxygen, Carbon di Oxide, directional, valve) and like terms  |   |   |   |   |
| <b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b>  |   |   |   |   |
| Category*  | Citation of document, with indication, where appropriate, of the relevant passages  | Relevant to claim No.   |   |   |
| X  | US 5485834 A (JOYE et al) 23 January 1996<br>Claims 1 - 7 and fig. 1  | 1 - 22  |   |   |
| X  | US 4019509 A (LI et al) 26 April 1977<br>Claims 1 - 11  | 1 - 22  |   |   |
| A  | US 5676134 A (KUHN) 14 October 1997<br>Whole document   | 1 - 22  |   |   |
| <input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C <input checked="" type="checkbox"/> See patent family annex  |   |   |   |   |
| <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; vertical-align: top;"> <p>* Special categories of cited documents:</p> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier application or patent but published on or after the international filing date</p> <p>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p> </td> <td style="width: 50%; vertical-align: top;"> <p>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone</p> <p>"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art</p> <p>"&amp;" document member of the same patent family</p> </td> </tr> </table> |   |   | <p>* Special categories of cited documents:</p> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier application or patent but published on or after the international filing date</p> <p>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p> | <p>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone</p> <p>"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art</p> <p>"&amp;" document member of the same patent family</p> |
| <p>* Special categories of cited documents:</p> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier application or patent but published on or after the international filing date</p> <p>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p>  | <p>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone</p> <p>"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art</p> <p>"&amp;" document member of the same patent family</p> |   |   |   |
| Date of the actual completion of the international search<br><b>3 May 2004</b>   |   | Date of mailing of the international search report<br><b>6 - MAY 2004</b>     |   |   |
| Name and mailing address of the ISA/AU<br>AUSTRALIAN PATENT OFFICE<br>PO BOX 200, WODEN ACT 2606, AUSTRALIA<br>E-mail address: pct@ipaustalia.gov.au<br>Facsimile No. (02) 6285 3929   |   | Authorized officer<br><br><b>E.J. MARTYN</b><br>Telephone No : (02) 6283 2332 |   |   |

# INTERNATIONAL SEARCH REPORT

International application No.

PCT/IB2003/005838.

| C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT |  |                       |
|---|--|-----------------------|
| Category*   | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
| A   | US 2002/0020414 A (FUKUNAGA) 21 February 2002<br>Whole document                    | 1 - 22                |

## INTERNATIONAL SEARCH REPORT

International application No.

**PCT/IB2003/005838**

This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

| Patent Document Cited in Search Report   |            | Patent Family Member |          |
|--|------------|----------------------|----------|
| US   | 5485834    |                      |          |
| US   | 4019509    | AU                   | 86899/75 |
|  |            | BR                   | 7508643  |
|  |            | CA                   | 1022424  |
|  |            | DE                   | 2613852  |
|  |            | FR                   | 2321909  |
|  |            | GB                   | 1520909  |
|  |            | JP                   | 52028193 |
|  |            | SE                   | 7600380  |
|  |            | SU                   | 628802   |
|  |            | ZA                   | 7507147  |
| US   | 5676134    | EP                   | 0715862  |
|  |            | NO                   | 954249   |
| US   | 2002020414 |                      |          |
| <p>Due to data integration issues this family listing may not include 10 digit Australian applications filed since May 2001.</p> <p>END OF ANNEX</p> |            |                      |          |

**PATENT COOPERATION TREATY**  
**PCT**  
**INTERNATIONAL PRELIMINARY EXAMINATION REPORT**  
(PCT Article 36 and Rule 70)

REC'D 14 SEP 2004

WIPO PCT

|  |  |  |
|--|--|--|
| Applicant's or agent's file reference<br>2911-PCT  | <b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416). |  |
| International Application No.<br><b>PCT/IB2003/005838</b>  | International Filing Date<br>(day/month/year)<br>11 December 2003  | Priority Date (day/month/year)<br>12 December 2002 |
| International Patent Classification (IPC) or national classification and IPC<br>Int. Cl. <sup>7</sup> A62B 7/14, 9/00, 11/00 |  |  |
| Applicant<br>BASSOVITCH, Oleg  |  |  |

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 3 sheets, including this cover sheet.

☐ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of sheet(s).

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

|   |  |
|---|--|
| Date of submission of the demand<br>16 June 2004  | Date of completion of the report<br>6 September 2004                         |
| Name and mailing address of the IPEA/AU<br>AUSTRALIAN PATENT OFFICE<br>PO BOX 200, WODEN ACT 2606, AUSTRALIA<br>E-mail address: pct@ipaustalia.gov.au<br>Facsimile No. (02) 6285 3929 | Authorized Officer<br><br><b>E.J. MARTYN</b><br>Telephone No. (02) 6283 2332 |

**I. Basis of the report****1. With regard to the elements of the international application:\***

- ☒ the international application as originally filed.
- ☐ the description, pages , as originally filed,  
pages , filed with the demand,  
pages , received on with the letter of
- ☐ the claims, pages , as originally filed,  
pages , as amended (together with any statement) under Article 19,  
pages , filed with the demand,  
pages , received on with the letter of
- ☐ the drawings, pages , as originally filed,  
pages , filed with the demand,  
pages , received on with the letter of
- ☐ the sequence listing part of the description:  
pages , as originally filed  
pages , filed with the demand  
pages , received on with the letter of

**2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.**

These elements were available or furnished to this Authority in the following language which is:

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).

**3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:**

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

**4. ☐ The amendments have resulted in the cancellation of:**

- ☐ the description, pages
- ☐ the claims, Nos.
- ☐ the drawings, sheets/fig.

**5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).\*\***

\* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).

\*\* Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement****1. Statement**

|                               |               |     |
|-------------------------------|---------------|-----|
| Novelty (N)                   | Claims 1 - 22 | YES |
|                               | Claims        | NO  |
| Inventive step (IS)           | Claims 1 - 22 | YES |
|                               | Claims        | NO  |
| Industrial applicability (IA) | Claims 1 - 22 | YES |
|                               | Claims        | NO  |

**2. Citations and explanations (Rule 70.7)**

Claims 1 - 22

The invention of the claims is an apparatus for breathing an air mixture expired by a user and providing an air mixture which has lower oxygen concentration than the ambient air.

No individual citation or obvious combination of citations disclose the opposite purpose of providing a supplementary oxygen to the user, also has components providing the function of communicating an air supply to the user which exposes them to short term hypoxia and the further ability to vary the size of the reservoir holding the total volume of air supply available to the user.

The closest related art are:

US 4019509 A

US 5485834 A.